

AMENDMENT TO THE CLAIMS:

The following claim set replaces all prior versions, and listings, of claims in the application:

1. (currently amended) A process for the carbonylation of a conjugated diene comprising:
reacting a conjugated diene with carbon monoxide and a hydroxyl group-containing compound in the presence of a palladium catalyst system in a reaction zone to produce a reaction mixture, said catalyst system comprising:
(a) a source of palladium cations,
(b) a phosphine process ligand which is a mono-, bi- or multidentate phosphine process ligand containing at least one phosphorus atom which is directly bound to two or three aliphatic carbon atoms to produce a palladium-phosphine ligand complex catalyst, and (c) a source of anions, wherein the process ligand (b) is at least one selected from the group consisting of 2,3-bis(9-phosphabicyclononyl)butane, 1,2-bis(9-phosphabicyclononyl)ethane, 1,2-bis (9-phosphabicyclononyl) propane, 1,2-bis (carboxymethyl)-1,2-bis(9-phosphabicyclononyl) ethane, 1,2-bis(hydroxymethylene)-1,2-bis(9-phosphabicyclononyl)ethane, 1,2- bis (methoxymethylene)-1,2-bis(9-phosphabicyclononyl)ethane, 1,2-bis(9-phosphabicyclononyl) cyclohexane, 1,2-bis(9-phosphabicyclononyl)benzene, 1,2- bis (9-phosphabicyclononyl)cyclopentane, 3,4-bis (9-phosphabicyclononyl)hexane, 2-bis (dicyclohexylphosphino)-3-(9-phosphabicyclononyl)butane, 1,2-dicyclohexyl-1,2-bis (9-phosphabicyclononyl)ethane and 1-cyclohexyl-1,2-bis(9-phosphabicyclononyl)ethane, and

- (c) a source of anions containing a carboxylic acid, wherein the process ligand (b) is fed continuously or periodically into the process as ligand make-up at a temperature of 50°C or lower, and wherein the process further comprises feeding a second phosphine ligand different from the process ligand (b) continuously or periodically to the process as ligand make-up, wherein said second phosphine ligand contains at least one phosphorous atom which is connected to two aryl groups and is chosen such that its phosphonium salt is reversible under carbonylation conditions.
2. (original) A process as claimed in claim 1, wherein the ligand make-up is added to a reaction mixture containing at least a portion of the catalyst system.
 3. (original) A process as claimed in claim 2, wherein said process is performed as a continuous process.
 4. (previously presented) A process as claimed in claim 1, wherein said process further comprises separating reaction product from said reaction mixture to obtain a catalyst mixture containing at least a portion of said catalyst system and recycling at least a portion of said catalyst mixture to the reaction zone.
 5. (original) A process as claimed in claim 3, wherein said process further comprises separating high boiling compounds and/or dead ligand from said catalyst mixture and recycling the mixture containing catalyst obtained in the high boiler purge/catalyst separation zone and/or obtained in the dead ligand/catalyst separation zone to the reaction zone.
 6. (original) A process as claimed in claim 4, wherein said ligand make-up is added to said catalyst mixture prior to feeding said catalyst mixture to the reaction zone.

7. (original) A process as claimed in claim 5, wherein said ligand make-up is added to the mixture containing catalyst prior to feeding said mixture to the reaction zone.
8. (previously presented) A process according to claim 5, wherein said mixture containing catalyst is united with the catalyst mixture prior to feeding said catalyst mixture to the reaction zone resulting in a united catalyst mixture and said ligand make-up is added to said united catalyst mixture.
9. (currently amended) A process according to claim 1, further comprising monitoring the concentration and degradation rate of the process ligand during the course of the carbonylation process and thereby determine a consumption amount of the process ligand (b), and adding the second phosphine ligand in an amount sufficient to make-up ~~as ligand make-up to the consumption process in an amount that is equal to the~~ amount of the process ligand (b) ~~that is consumed~~.
10. (cancelled)
11. (cancelled)
12. (previously presented) A process as claimed in claim 1, wherein said second phosphine ligand has less coordination strength to palladium than the process phosphine ligand.
13. (previously presented) A process as claimed in claim 1, wherein said second phosphine ligand is a triaryl phosphine or a bis(diarylphosphino) alkane.
14. (original) A process as claimed in claim 13, wherein said second phosphine ligand is selected from the group consisting of triphenyl phosphine, a substituted triphenylphosphine, a trinaphthylphosphine, a substituted trinaphthylphosphine or

a bis (diphenylphosphino) alkane derivative having 2-8 carbons between the phosphorus atoms, straight or branched.

15. (previously presented) A process as claimed in claim 1, wherein the second phosphine ligand is fed to the process together with the process ligand as ligand make-up.
16. (cancelled)
17. (previously presented) A process as claimed in claim 1, wherein the process ligand is added in an organic solvent for the process ligand, wherein the organic solvent is selected from the group consisting of an alkanol, a C6-diester, or a mixture thereof.
18. (previously presented) A process as claimed in claim 1, wherein the conjugated diene is 1,3-butadiene.
19. (previously presented) A process as claimed in claim 1, wherein the hydroxy-group containing compound is methanol or ethanol.
20. (previously presented) A process as claimed in claim 1, wherein the carboxylic acid is selected from the group consisting of pivalic acid, monomethyladipate, 3-pentenoic acid, acetic acid or a mixture of two or more of these compounds.
21. (previously presented) A process as claimed in claim 1, comprising adding the second phosphine ligand as make-up ligand to the process ligand prior to feeding of the process ligand to the reaction zone.